

RECEIVED
CENTRAL FAX CENTER

MAY 16 2007

Application No: 10/525,908
Amendment A
Reply to Office Action Date 12/06/2006

Attorney Docket: 3883-024

REMARKS

Claims 1-8 are now pending in the application. Claim 1 has been amended.

Claims Rejections – 35 USC 103

Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugiyama et al. (US 2002/0181721 A1 – hereinafter "Sugiyama") in view of Prohs (US 4,496,022).

Claim 1 is amended according to paragraph 38 of the specification, and thus does not introduce any new matter. Since the microphone cable is built in the inside of the baffle, disturbance of the sound field of the around of the baffle is suppressed, and thus it becomes possible to accurately pick up sound from the sound source. This feature is not disclosed or suggested by any of the cited references.

In the following, Applicants compare the present invention with the cited references:

(a) The difference in composition

The Examiner has stated that all the features except "a spherical, semi-spherical or polyhedral baffle" of claim 1 of the instant application are disclosed by Sugiyama. The Examiner has then stated that Prohs teaches a spherical, semi-spherical or polyhedral baffle (see Fig. 2 and abstract) and it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the teaching of Prohs into Sugiyama to more accurately locate the sound source.

{WP361425;1}

- 6 -

Application No: 10/525,908
Amendment A
Reply to Office Action Date 12/06/2006

Attorney Docket: 3883-024

It is noted that Sugiyama is also different from the present invention in that the input apparatus used for entering the distance to a sound source is not indicated. The sound source searching system of Sugiyama analyzes the direction from which sound comes with a plurality of output signals of a microphone pair, and estimates a sound source position combining this information.

Specifically, in Sugiyama a pair of microphones spaced apart from each other by a predetermined distance are each disposed on two crossing straight lines, a difference between sound arrival times to each pair of microphones is obtained, and the direction of the sound source is estimated from the arrival time differences (see claim 2 of Sugiyama).

Therefore, the input apparatus which enters the distance to a sound source is not disclosed by Sugiyama.

In contrast, the present invention enters beforehand the distance to the position of a plurality of spherical (baffle) surrounding sound sources, and concerns a method that performs sound source searching so that a searchlight may be illuminated to the circumference centering on a sphere. From this, estimation of the sound intensity of a plurality of sound source portions is possible. Moreover, the analysis about the delay sound (reflection) in which a direction differs from the component of the direct sound from a reflective surface is also possible.

Further, the following limitations claim 1 of the instant application are not disclosed or suggested by Sugiyama:

"the arithmetic-processing apparatus, by arithmetic processing, finds the amplitude characteristics and phase characteristics of each of the acoustic signals picked up by the plurality of microphones, after which it combines that signal information with analysis information for the sound field around said baffle, and together with performing arithmetic processing to emphasize

(WP361425,1)

Application No: 10/525,908
Amendment A
Reply to Office Action Date 12/06/2006

Attorney Docket: 3883-024

the sound coming from a specific direction for all directions, and identifying the direction from which the sound comes, it estimates the intensity of the sound from the sound source or sound sources generated at one or more of sites on boundary surfaces based on the arithmetic-processing results and distances input from the input apparatus."

(b) The difference in effect

The present invention has various effects which the cited references do not have. The difference between Sugiyama and the present invention is shown in the following table.

	Present invention	Sugiyama
1) A plurality of sound source searching on simultaneous same frequency.	○	×
2) The contour indication of a sound source searching result.	○	×
3) Estimation of the sound power of a sound source.	○	×
4) The contour indication of the sound power.	○	×
5) Searching of the sound source by frequency band specification.	○	×
6) Extraction of the sound according to direction.	○	×

○ : Possible

× : Impossible

1) Searching of a plurality of sound sources in simultaneous same frequency.

Sugiyama estimates the position of a sound source from difference between sound arrival times to each pair of microphones, as described above (see claim 2).

[WP361425;1]

Application No: 10/525,908
Amendment A
Reply to Office Action Date 12/06/2006

Attorney Docket: 3883-024

Therefore, Sugiyama is used for searching of a simple point sound source, and can search simultaneously neither a plurality of sound sources in the same frequency, nor a plurality of sound sources in a predetermined frequency band.

In contrast, the present invention is a system which searches a sound source so that a searchlight may be illuminated to the circumference centering on a sphere as above-mentioned. From this, it is possible to search a plurality of sound sources in simultaneous same frequency or a predetermined frequency band in the present invention.

That is, only the present invention can estimate the direction from which the sound comes and intensity of the sound source from all the directions simultaneously, and these cannot be performed in Sugiyama of a quotation.

2) The contour display of a sound source searching result

In Sugiyama, the display of the result of sound source searching displays the position of the sound source in the searched frequency. That is, it cannot evaluate for every band but the position of the sound source of predetermined frequency is displayed as one point. In contrast, in the present invention, since searching of the size of the sound source of all the directions in a predetermined frequency band is possible as described above, it is possible to display in the state of the contour (contour line) which evaluates a sound source searching result for every band.

3) Estimation of the sound power of a sound source

(WP361425;1)

Application No: 10/525,908
Amendment A
Reply to Office Action Date 12/06/2006

Attorney Docket: 3883-024

The present invention comprises the input apparatus which enters beforehand the distance to the position of a plurality of sound sources. By this, the sound power of a sound source can be estimated correctly.

That is, in the arithmetic processing apparatus of the present invention, the direction from which the sound from the sound source comes and the sound pressure were identified by the arithmetic processing, and the sound power of a sound source is estimated from the arithmetic processing results and distance to the sound source entered from the above-mentioned input apparatus. In contrast, in Sugiyama, if the distance and positional relationship between micro phone pairs have become settled beforehand, it is sufficient, and there is no statement which enters the distance to a sound source into equipment. Therefore, an estimation of the sound power of a sound source is not made in Sugiyama.

4) The contour display of the sound power

As described above, the present invention can estimate the sound power of a sound source correctly. And in the arithmetic processing apparatus, since "together with performing arithmetic processing to emphasize the sound coming from a specific direction for all directions", it is possible to indicate the sound power by a contour (contour line). As a result, the excellent effect of distribution, movement, etc. of the sound power of a sound source, which can be analyzed easily, is obtained. In contrast, since Sugiyama concerns a simple point sound source searching, it is difficult to indicate by a contour.

5) Searching of the sound source by frequency band specification

Sugiyama cannot respond to sound source searching by the specification according to frequency band because it can only perform simple point sound source searching as mentioned

(WP361425;1)

Application No: 10/525,908
Amendment A
Reply to Office Action Date 12/06/2006

Attorney Docket: 3883-024

above. In contrast, since in the present invention the sound source search for all the directions in a predetermined frequency band is possible, sound source searching by frequency band specification is possible. Since acoustical technology is made in practice by the evaluation for every frequency band in many cases, the present invention in which the evaluation for every frequency band is possible performs searching of the sound source by frequency band specification, which cannot be done by the cited references.

6) Extraction of the sound according to direction

In a present invention, the arithmetic processing apparatus performs "arithmetic processing in all the directions" as mentioned above. As a result, even if it is a case where a sound occurs simultaneously, for example from the spherical around all directions, the arithmetic processing apparatus can extract the sound according to direction.

In contrast, since Sugiyama concerns only simple point sound source searching as mentioned above, extraction of the sound according to direction cannot be performed.

The effects according to claim 1 of the instant application cannot be obtained even by a combination of Sugiyama and Prohs.

Claim 1 is, therefore, believed to be patentable over the art and dependent claims 2-3 are believed to be patentable as well due to their dependency on independent claim 1.

{WP361425:1}

- 11 -

RECEIVED
CENTRAL FAX CENTER

MAY 16 2007

Application No: 10/525,908
Amendment A
Reply to Office Action Date 12/06/2006

Attorney Docket: 3883-024

Allowable Subject Matter

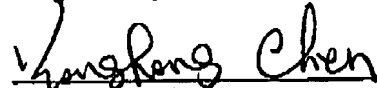
Claims 4-8 are objected to as being dependent upon a rejected base claim, but would be allowable if written in independent form including all of the limitations of the base claim and any intervening claims.

Since claim 1 is believed to be patentable as discussed above and claims 4-8 are ultimately dependent on claim 1, they are believed to be patentable as well.

Favorable consideration and early issuance of the Notice of Allowance are respectfully requested. Should further issues remain prior to allowance, the Examiner is respectfully requested to contact the undersigned at the indicated telephone number.

The Commissioner is hereby authorized to charge any fees which may be required at any time during the prosecution of this application without specific authorization, or credit any overpayment, to Deposit Account Number 50-0951.

Respectfully submitted,



Yonghong Chen

Registration No. 56,150

Customer No. 30448

Akerman Senterfitt

222 Lakeview Avenue, Suite 400

West Palm Beach, FL 33401

Phone: 561-653-5000

Fax: 561-659-6313

Date: May 16, 2007

(WP361425;1)

- 12 -